



19

REMARKS ON THE MANAGEMENT OF CASES
OF ABDOMINAL SECTION.

By JOHN D. MALCOLM, M.B., C.M., F.R.C.S.Ed.



*Reprinted from Volume Fifth of the EDINBURGH HOSPITAL REPORTS.
Edinburgh and London, Young J. Pentland, 1898.*



Remarks on the Management of Cases of Abdominal
Section.¹ By John D. Malcolm, M.B. C.M.,
F.R.C.S.Ed.

In the management of every case of surgery, the operator has to consider four points:—

1. The greater or less certainty of his diagnosis.
2. The manipulations required for the cure or relief of the abnormal condition.
3. The measures required to ensure the healing of the wound.
4. The precautions by which all unnecessary interference with the functions of the parts concerned may be avoided.

I do not propose on the present occasion to deal with the two first of these points. Their consideration, even in a most superficial way, would open up a field of inquiry far beyond the limits of a short paper.

Neither shall I advert to the measures that should be adopted to ensure the healing of a wound, except to remark that I use antiseptics carefully, and that I do not believe it possible to secure the safety of the patient by any other method. I regard this as more important in abdominal surgery than in the surgery of many parts of the body, because a septic flesh wound may be recovered from, whereas a septic general peritonitis is nearly always fatal. I have so much faith in antiseptics (used with proper care), that if a patient during convalescence from any fairly simple abdominal section exhibits unfavourable symptoms, I feel absolutely confident that the mischief is not due to septic peritonitis; and it is a great advantage to be able to eliminate this source of danger in directing the subsequent treatment. I have never seen a death from suppurative peritonitis when anti-

¹ Read before the South-West London Medical Society, 11th November 1896.

septics have been carefully used in a fairly simple case, but I have seen suppurative peritonitis resulting from a simple operation when no antiseptic had been used.

The fourth point, namely, the precautions by which all unnecessary interference with the functions of the parts concerned may be avoided, especially in relation to abdominal surgery, is the subject to which I desire shortly to invite attention, the measures to be adopted to secure this end being of interest to every practitioner, whether engaged in general or special practice.

The preservation of function in the parts operated on should never be neglected by the surgeon, although the cases are, unfortunately, only too numerous in which a sacrifice must be made. The pectoral muscle, for instance, must sometimes be removed in the operation for complete extirpation of a carcinoma of the breast; but when the surgeon has to remove the glands of the axilla, he should most carefully avoid interference with the large vessels and nerves in this neighbourhood, because their division might involve not only the loss of power in a part of the arm, but perhaps also the loss of the whole limb, or even of the patient's life. So, in operating on the larynx, means must be taken to prevent a flow of blood down the trachea; in operations on the eye, vision must be preserved, if possible; and certain portions of the brain must be for ever exempt from surgical interference.

The surgery of the abdomen may in some respects be compared to that of a large joint, for example, the knee. When any operation is performed which involves opening the serous cavity of this joint, the surgeon, besides removing the disease, endeavours to ensure the healing of his wound, and either the restoration of free movement in the limb or its fixation in the position likely to be most useful to the patient. In abdominal surgery, it is also necessary that those parts which are naturally movable on each other should be so treated as to remain movable, or to become fixed in such positions that their functions will not be seriously interfered with. But there is this important difference in the two cases, that the worst effect of a want of movement in a joint is a loss, more or less complete, of usefulness of the limb:

whereas, in abdominal surgery, it is often the life of the patient that is at stake.

When a raw surface is left in contact with a peritoneal surface, an adhesion is very apt to take place between the two; and if this adhesion is in such a position as to cause an acute bend in the bowel, an intestinal obstruction may be caused, and may lead to a fatal issue. There is another form of bowel difficulty which follows an abdominal section. The exposure and manipulation of the intestines causes a temporary paralysis or paresis of the gut, which is not recovered from for some hours or days, and the combined effects of this paresis, and of slight obstructions due to intestinal adhesions, may be very serious. Intestinal distension occurring a few days after an operation, whether induced by paralysis of the gut or by an obstruction, may, I believe, be an important factor in causing a high temperature and a rapid pulse, although there is no septic influence at work. Some surgeons assert that every inflammation is due to the influence of micro-organisms. This is distinctly opposed to the teaching of Lister—at least, as I understand his writings. He attributes inflammation to irritation, but he does not state that the irritation is necessarily associated with micro-organisms. On the contrary, his description of the early stages of inflammation is a description of the effects of such irritants as hot water, mustard, etc., when applied to transparent tissues. He wrote that “a certain amount of inflammation, as caused by direct irritation, is essential to primary union,”¹ and I am not aware that any of his subsequent writings are at variance with the views he expressed on this subject in 1857. Quite recently, Mr. Watson Cheyne has written that “inflammation may be defined as the immediate series of changes which occur in the tissues as the result of an injury, provided always that the injury is not of sufficient violence to destroy the tissues at once. That is to say, whenever an injury is done to a part, whether the noxious agent be a chemical or a mechanical one, a certain series of changes commences in that part, and that series of changes, up to a certain point (so long as they are of an

¹ On the Early Stages of Inflammation,” *Phil. Trans.*, London, 1857, p. 700.

exudative or destructive character) forms what we know as the inflammatory process.”¹

According to these views, it follows that surgical septicæmia is a complication of the inflammation necessarily set up by a wound; and it appears to me, judging from a clinical point of view, that many of the phenomena which follow operative procedures can only be explained if inflammation is attributed to any irritation which diminishes the vitality of the tissues without killing them, whether the irritation be mechanical, thermal, or chemical. Indeed, it seems scarcely consistent with our present knowledge to suppose that we could divide the tissues of the body by the knife without setting up local and general effects, showing that the organism resents such treatment. These local and general effects constitute inflammation. The inflammation induced by a clean-cut incision, if the parts be kept at rest, is undoubtedly trifling when compared with that of the septic inflammations which alone are recognised by some surgeons. This, however, is simply the difference between inflammation due to a local mechanical irritation and the same inflammation complicated by an infecting irritation.

Whilst using the word “inflammation” at the bedside, the surgeon usually applies it only to clearly obvious conditions; and we cannot, in teaching students, insist too strongly on the necessity for avoiding all sources of septic infection, which is the ordinary cause of serious inflammation. Nevertheless, as I have pointed out, inflammation has been authoritatively described as signifying the effects of irritation on the tissues, and a most beautiful and convincing record of facts proving this contention has been published.² Moreover, there is one form of inflammation, the tubercular, which is associated with a definite bacillus; and, as our knowledge increases, it is quite likely that other inflammations may be clearly differentiated. Even with our present information, the effects of septic conditions on a flesh wound and on the peritoneum are so various, that the word inflammation must have a very indefinite meaning, if it is to be considered as

¹ Treves' "System of Surgery," vol. i. p. 53.

² Lister, *loc. cit.*

necessarily implying the existence of a septic process. And it is most important that a word so constantly in use should convey a precise idea.

From such considerations it seems to me very desirable that the word inflammation should be retained to designate the effects of any irritation, whether it be mechanical, thermal, or chemical, which, when applied to living tissues, produces a "temporary impairment of functional activity or vital energy";¹ and that whenever it is desired to state the cause or nature of the inflammation a definite adjective should be used, such as traumatic, septic, erysipelatous, tubercular, etc.

Although the inflammation resulting from a mechanical irritation, such as the passage of a knife through the tissues, is usually unimportant, yet in certain states of debility, especially of cardiac debility, or of nervous irritability, it seems to me that an inflammation due to an irritation which is not connected with micro-organisms may give rise to really serious symptoms, or even a fatal issue.

I have not space to go fully into the matter here, but I have elsewhere² argued that in traumatic fever there is an increasing contraction of the blood vessels throughout the body as long as the fever advances, that is, for two to three days. This is a reflex effect of the irritation and obstruction to blood flow in the inflamed area, and it may or may not be accompanied by a quick pulse. When the heart is strong enough to keep the blood in circulation without much effort, the pulse remains slow; but usually the increased work, and probably also reflex nervous conditions, cause some hastening of its action. It follows as a matter of course, that an increased vascular tension caused by tympanites must directly throw extra work on the heart, and must indirectly act injuriously on the local inflammatory condition, and through this must again act so as still further to weaken the pulse. Clinically it is demonstrable that an increasing intestinal distension, occurring during the first four or five or more days after an abdominal section, that is, during the active febrile

¹ Lister, *loc. cit.*, p. 701.

² "The Physiology of Death from Traumatic Fever."

disturbance caused by the division of tissue, is, if sufficiently persistent, invariably followed by an increase of febrile phenomena, and that these phenomena usually subside if the distension be removed. Similar effects may often be observed in midwifery cases also.

Another condition which I have noted frequently is of interest. When a patient after an abdominal section has no adverse symptoms, except that flatus does not pass from the bowels, and that there is some tympanites, these unfavourable conditions may suddenly right themselves, the belly becoming flat, and the patient being immediately more comfortable. There is, however, not unfrequently a sharp rise of temperature and pulse for twenty-four hours or more, accompanying the improvement in the patient's comfort and general condition. Many surgeons attribute this rise of temperature to septic influences. The evidence, however, seems to me to show that the febrile phenomena are due to the tearing of recently formed adhesions, by which an obstruction of the bowel is released, and at the same time a fresh inflammatory action is induced, the irritation being not a septic one, but due to a purely mechanical tearing of tissue.

Mr. Lawson Tait was one of the first to urge the importance of keeping the intestinal canal freely open after an abdominal section, and in 1886 he announced that he could cure peritonitis by purgatives. In the following year I published the view that many conditions which had been attributed to peritonitis were really due to paralysis and obstruction of the bowels, and this view is now generally accepted as correct.

The treatment of abdominal cases was, of course, modified when it became known that tympanites after an abdominal section is not, as a rule, due to a general, far less to a septic peritonitis. Formerly patients were put deeply under the influence of opium after abdominal operations, and this tended further to keep the bowel quiet, and facilitate the formation of adhesions. Food was administered freely, the object being to keep up the strength of the patient, but the effect being that the bowel was very often still more weakened by overwork.

Every care should be taken to diminish the necessity for peristalsis until the bowel recovers from the shock of the operation, and to prevent any interference with the intestinal functions. I consider this only second in importance to the necessity for the use of antiseptics. Precautions must be taken before, during, and after the operation. Before operation, if there be time, every attention should be paid to getting the bowel cleared, and especially the lower bowel. A course of laxatives, including calomel and purgative enemata, given daily or every other day for a week, more or less, may make all the difference between a smooth convalescence and a complicated one, or a fatal issue.

The practitioner must, however, very seriously consider the responsibility of giving a purgative, if the existence of any obstructive condition of the bowel is suspected. Operations for intestinal obstruction, after purgation has been attempted, are much more dangerous than those in which sedative treatment has been employed.

The diagnosis of an obstruction may be extremely difficult; but the great importance of avoiding purgatives, when it is possible that an occlusion or partial occlusion of the bowel may exist, is shown by the contrast of the two following histories:—

Last spring I was asked to see a patient with a view to an operation for a strangulated hernia, it having been decided in consultation that surgical treatment afforded the only chance of saving life. At the consultation referred to the patient was so ill that she was considered likely to be moribund before I could see her. I found her, however, in such a condition that I thought it right to operate. The history was that some days earlier she had been very ill, the symptoms pointing to the presence of an intestinal obstruction, and there being a small irreducible hernia. Under soothing treatment she got better, but the hernia did not disappear. Thinking that the obstruction was relieved, her medical attendant administered a laxative, and all the adverse symptoms returned immediately. I operated, released a Littré's hernia, the nipped piece of bowel being apparently not injured beyond the power of recovery. Next day the

patient's abdomen, which had been greatly distended, was quite flat, and I hoped that all would be well; but diarrhœa set in, which I could not control, and death from exhaustion followed. A post-mortem examination of the body showed that the mucous membrane of the piece of bowel which had been strangulated was gangrenous.

In the second case, an old man found one day that his hernia, which was of long standing, would not go back into the belly. Dr. Malcolm Mackintosh and his partner, Dr. Webb, failed to replace it, and sent for me. I operated the same day, and reduced the bowel. The man was in the habit of taking more to drink than was good for him, and he was nursed by a sister who had similar tendencies. The result was that the patient got up to stool twice the second night after the operation. Nevertheless, he made a good recovery.

These cases are to my mind typical of bad and good conditions for intestinal surgery. In fact, in abdominal surgery, the chances of success are infinitely greater if an operation be performed when there is no inflammatory conditions present. When inflammation has been started, it is hardly too much to say that the dangers of an operation are increased in direct proportion to the delay in operating. I do not wish for a moment to minimise the difficulties of the situation when the practitioner has to treat a case that may be simply one of constipation, but may be one of obstruction that can only be relieved by operation. It is easy for me to criticise the position after I have operated, and to point out that the first of the cases I have related would almost certainly have got well if an operation had been performed before the purgative was administered. Nevertheless, it is sometimes useful to record the wisdom that comes after the event, and I would urge that, whenever there is a possibility that the patient may be suffering from *obstruction* of the bowels, it should be a rule never to give a purge.

When any bowel difficulty is so severe that a doctor is called in, it is well to err on the safe side and give opium and belladonna. This treatment will rarely if ever do harm, it will cure many cases of obstruction that would be made much worse by the administration of a purgative, and, if

surgery be required, soothing treatment beforehand will increase the chances of success. It is frequently said that the administration of opium masks the symptoms, and leads to delay in operating which may be fatal. Of course this is true if the practitioner is satisfied as soon as he has relieved pain, but that seems to me a very short-sighted view to take of these cases.

During an operation everything should be done to avoid displacing and manipulating the intestines unnecessarily. "The toilet of the peritoneum" was the expression applied to the elaborate cleansing of this membrane formerly in vogue. The general opinion seems to be that this toilet did harm by causing peritonitis, and that the good effects of newer methods are due to the avoidance of this inflammation. But if the toilet of the peritoneum was so dangerous from this point of view, many patients should have died who got quite well. I have often seen the intestines taken out of the abdomen and literally scrubbed, almost from end to end, the loin pouches and that of Douglas being similarly treated, in order to remove the very viscid contents of a ruptured ovarian tumour, and yet recovery very generally took place without any trouble after such manipulations.

When patients did badly then, as now, the first difficulty was that flatus did not pass downwards and the intestines became distended. By giving up the toilet of the peritoneum, and treating this membrane as gently as possible, the surgeon certainly avoids irritating it. But at the same time he has ceased to disturb the position of the various coils of intestine, and to paralyse them by much handling. When sponges were repeatedly thrust into the recesses of the peritoneal cavity, I have frequently noted that a coil of gut was pulled up from the bottom of Douglas' pouch, and of course some other coil must have taken its place. Thus, the various portions of the bowel were left in all sorts of unnatural positions, where they lay until they revived from the mauling to which they had been subjected, and where they were apt to become adherent if they were in contact with raw surfaces.

The method of washing out the abdomen is one of the best possible for arranging the intestines. The most suc-

cessful plan is to fill the peritoneal cavity with the lotion to be used, and to shake the intestines about in this lotion, which is allowed to flow out freely without any sponging. When thus treated, the intestines float easily into normal positions, and I believe that this, rather than its cleansing effect, is the secret of the success of the method in the numerous cases in which it has been used when there has been no suspicion that septic mischief existed. I never use this plan, however, unless there are septic conditions already present, because antiseptic lotions sufficiently strong to be free from germs cannot be used without danger, and I consider it impossible to insure against sepsis with weaker ones.

It was first pointed out to me by Mr. Knowsley Thornton, that very often when a patient has much sickness from the anæsthetic after an abdominal operation, the convalescence is unusually smooth in other respects, and I believe this is due to the fact that when the body is violently agitated by the efforts of the patient to vomit, the intestines are shaken into a natural position, and thus all difficulties due to intestinal displacements are obviated. In a book called "A Compleat Body of Chirurgical Operations, containing the whole Practice of Surgery,"¹ published in London in 1702, after the directions for reducing the gut in cases of penetrating wound of the abdomen, it is remarked that "there is no necessity of shaking the body, as the ancients did, to restore the guts to their place, Nature taking sufficient care in this affair."

When it was my duty to perform the post-mortem examinations at the Samaritan Free Hospital, I saw many cases in which nature had failed to take sufficient care, and I am inclined to agree with "the ancients" on this matter. Shaking the body is, of course, out of the question, but in operating on ovarian tumours, or whenever it has been necessary to manipulate the bowels, it has for some time been my habit to have the patient kept deeply under the anæsthetic

¹ "A Compleat Body of Chirurgical Operations, containing the whole Practice of Surgery, with Observations and Remarks on each Case, etc.," by M. de la Vanguion, M.D., and Intendant of the Royal Hospitals about Paris, the second edition, faithfully done into English. London, 1702, p. 25.

till the end of the operation, and before putting on the dressings I place my hands on the belly and vigorously but carefully shake it. I am sure that the theory on which this practice is founded is good, and as a matter of fact I have seen an irregularly-shaped belly made at once smooth and flat by this proceeding.

In the treatment of the patient after an abdominal section, it is desirable to get the intestinal tract to resume its functions as soon as possible, and yet it is essential to give it a little time, and in some cases a considerable time, to recover its tone. Feeding by the rectum is therefore resorted to. As soon as the sickness from the anæsthetic is over, small quantities of liquid food should be given by the mouth. If this should cause sickness, the stomach should be left quiet for an hour or two, when another trial may be made. It is useless, and may be positively harmful, to feed a patient who is constantly sick; and it is unwise to give food freely by the mouth if there is abdominal distension and no flatus is escaping from the rectum, because it is absolutely certain that if sufficient food be given and flatus does not escape downwards, sickness will sooner or later be induced.

Nearly three years ago I had a patient¹ who, from the date of an operation for the removal of a fibroid tumour, which had caused much inflammation, was unable for many weeks to take food by the mouth without bringing on pain and abdominal distension. She gradually became able to get about and to take more food; but the tendency to distension continued, and, twenty-two months after the first operation, I reopened the belly, and found the centre of the transverse colon fixed by adhesions to the back of my incision rather nearer to the pubes than to the navel. This was released, with great benefit to the patient, and her health has been improving ever since. I once made a post-mortem examination in which an almost exactly similar condition was found, and had obviously been the cause of death.

Another case,² showing the importance of the escape of

¹ Twenty-six cases in which an abdominal section has been performed a second time. Case No. 14, *Med. Soc. Trans.*, vol. xx.

² *Ibid.*, Case No. 3.

flatus, was that of a woman, aet. 59, on whom I performed a left ovariectomy six years after a tumour of the right ovary had been removed by another surgeon. At my operation there were numerous adhesions which required separation, and there was considerable irregular intestinal distension during the first week of convalescence, although the bowels were repeatedly and freely moved. Towards the end of the second week the bowel difficulty became greater, the temperature rose, distension increased, and enemata, which had acted before, seemed to have lost their effect. On the thirteenth day the temperature rose to 103° F., flatus ceased to pass from the rectum, and the abdomen became very large. Towards the afternoon the patient became unconscious, and in the evening I thought it quite certain that she would not survive till the morning. I ordered the administration of a gruel and turpentine enema, and told the nurse that there was no need to inform me of the patient's condition during the night unless it improved. I was not sent for, but the result of the enema was the expulsion of some very hard lumps of faeces and a large quantity of flatus. In the morning the temperature was 100°·8, the belly was flat, the patient was quite conscious, and convalescence thenceforth was uninterrupted.

Such cases show the importance of an open lumen throughout the intestinal tract. When the intestine does not resume its tone for some time after an operation, a warm drink, such as a cup of tea, may start peristalsis and be very soon followed by an escape of flatus from the rectum. Five or six ounces of warm water, with a teaspoonful of bicarbonate of soda dissolved in it, may also be useful if a patient is retching a great deal. This treatment may cause vomiting, which is much less exhausting than constant retching when nothing is ejected from the stomach, but very often it stops the retching without vomiting being induced.

When the only difficulty is that flatus does not escape from the rectum, the administration of 20 minims of tr. of belladonna in nutrient enemata every six hours may have a very beneficial effect, and although some surgeons say that nothing but harm comes from the administration of opium in

these cases, this drug is occasionally very useful. Given in 20-minim doses of the tincture, it sometimes allays all trouble from flatulence, and its administration is not infrequently followed by a free escape of flatus downwards. The late Dr. Thomas Keith used to give 15 grs. of quinine by rectum, to facilitate the passage of flatus downwards, and I have often seen good results from this treatment. Until a free escape of flatus takes place from the rectum, and all sickness ceases, nutrient enemata should be given every three hours; and whilst this is being done, a tube—the vaginal pipe of an ordinary Higginson's syringe answers very well—should be passed from two to three inches through the anus, and left thus for ten minutes before each injection. This allows any unabsorbed portion of the last injection to escape, and it also facilitates the passage of flatus which a tight sphincter ani might otherwise absolutely retain. The nurse should be instructed to pass this tube, if there is at any time pain from flatulence accompanied by a desire to pass something from the bowel.

In cases in which there seems to be serious difficulty, it is better to try to induce an action of the bowels by enemata than by giving purgatives by the mouth. Soap and water, or half an ounce of turpentine in a pint of gruel, will often move the bowels and clear away all unpleasant symptoms. The enema should be repeated if necessary. Calomel and salines given by the mouth sometimes act most beneficially; but it must be remembered that if purgatives do not move the bowels, or at least cause the downward escape of flatus, they will certainly have a very bad effect, whereas the intestine may often be induced to act by taking time and giving enemata repeatedly. As a last resort, the re-opening of the abdomen and the mechanical release of adhesions may be necessary.



